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Substitute for form 1449A/PTO

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet

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**Complete if Known**

Application Number	10/091,750
Filing Date	March 5, 2002
First Named Inventor	Louis B. Rosenberg
Art Unit	2674
Examiner Name	Kevin M. Nguyen

Attorney Docket Number  
IMMR-014/02US**U.S. PATENT DOCUMENTS**

Examiner	Cite No. <sup>1</sup>	Document Number Number Kind Code <sup>3</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
KN		6,717,573	4/06/2004	Shaholian et al.	
	1	6,422,941	7/23/2002	Thomer et al.	
		6,160,489	12/12/2000	Perry et al.	
		6,111,577	8/29/2000	Zilles et al.	
		5,690,582	11/25/1997	Ulrich et al.	
		5,575,761	11/19/1996	Hajianpour	
		5,437,607	8/1/1995	Taylor	
		5,436,622	7/25/1995	Gutman et al.	
		5,283,970	2/8/1994	Aigner	
		5,186,695	2/16/1993	Mangseth et al.	
		5,175,459	12/29/1992	Danial et al.	
		5,165,897	11/24/1992	Johnson	
		5,022,384	6/11/1991	Freels	
		4,885,565	12/5/1989	Embach	
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		4,127,752	11/28/1978	Lowthorp	
		2,972,140	2/14/1961	Hirsch	
		20020024501	03/04/1999	Shalit	
	↓	2001/0010513	08/02/2001	Rosenberg et al.	

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Country Code <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)			
KN		JP	H2-185278		7/19/1990	Taito Corporation	
KN		JP	H4-8381		1/13/1992	Epoch Co. and Key-Planning Co.	
KN		JP	H7-24147		1/27/1995	Sega Corporation	
KN		JP	H5-192449		8/3/1993	Taito Corporation	

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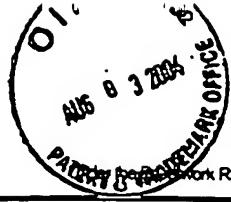
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Examiner Signature	<i>Kevin Nguyen</i>	Date Considered	01/19/05
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EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Kind Codes of U.S. Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

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Examiner Name	Kevin M. Nguyen

Attorney Docket Number

IMMR-014/02US

## OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
KN		PATRICK, "Design, Construction, and Testing of a Fingertip Tactile Display for Interaction with Virtual and Remote Environments," <i>Master of Science Thesis</i> , MIT, Aug. 1990, archived Nov. 8, 1990.
		CALDER, "Design of A Force-Feedback Touch-Introducing Actuator For Teleoperator Robot Control," <i>Bachelor of Science Thesis</i> , MIT, May 1983, archived June 23, 1983.
		WIKER, "Teletouch Display Development: Phase 1 Report," <i>Technical Report 1230</i> , Naval Ocean Systems Center, San Diego, July 1988.
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		JOHNSON, "Shape-Memory Alloy Tactile Feedback Actuator," <i>Armstrong Aerospace Medical Research Laboratory, AAMRL-TR-90-039</i> , August, 1990.
		KONTARINIS et al., "Tactile Display of Vibratory Information in Teleoperation and Virtual Environments," <i>PRESENCE</i> , 4(4):387-402, Harvard Univ., 1995.
		AUKSTAKALNIS et al., "Silicon Mirage: The Art and Science of Virtual Reality," ISBN 0-938151-82-7, pp. 129-180, 1992.
		EBERHARDT et al., "Inducing Dynamic Haptic Perception by The Hand: System Description and Some Results," <i>DSC-Vol. 55-1, Dynamic Systems and Control: Volume 1</i> , ASME 1994.
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		PIMENTEL et al., "Virtual Reality: through the new looking glass," 2 <sup>nd</sup> Edition; McGraw-Hill, ISBN 0-07-050167-X, pp. 41-202, 1994.
		"Cyberman Technical Specification," <i>Logitech Cyberman SWIFT Supplement to Logitech Mouse Technical Reference and Programming Guide</i> , 4/5/1994.
		OUHYOUNG et al., "The Development of A Low-Cost Force Feedback Joystick and Its Use in the Virtual Reality Environment," <i>Proceedings of the Third Pacific Conference on Computer Graphics and Applications, Pacific Graphics '95</i> , Seoul, Korea, 21-24 August 1995.
		KACZMAREK et al., "Tactile Displays," <i>Virtual Environment Technologies</i> , Chap. 9, pp. 349-414.
		LAKE, "Cyberman from Logitech," at <a href="http://www.ibiblio.org/GameBytes/issue21/greviews/cyberman.html">http://www.ibiblio.org/GameBytes/issue21/greviews/cyberman.html</a> , 1994.
↓		"Component Maintenance Manual With Illustrated Parts List, Coaxial Control Shaker Part No. C-25502," Saic Flight Instrument Corporation, Revised 28 January 2002 (3 pages).

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Kevin M. Nguyen

Date Considered

01/19/05

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Art Unit	2674
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**OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS**

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KN		"Technical Manual Overhaul Instructions With Parts Breakdown, Coaxial Control Shaker Part No. C-25502," Safe Flight Instrument Corporation, Revised 15 July 1980 (23 pages).
KN		SCANNELL, "Taking a Joystick Ride," Computer Currents, Boston Edition, Vol. 9, No. 11, November 1994
KN		YAMAKITA et al., "Tele-Virtual Reality of Dynamic Mechanical Model," Proceedings of the 1992 IEEE/RSJ International Conference on Intelligent Robots and Systems, Raleigh, NC, July 7-10, 1992
KN		NOLL, "Man-Machine Tactile," SJD Journal, July/August 1972 Issue.
KN		ROSENBERG, "Virtual Fixtures: Perceptual Overlays Enhance Operator Performance In Telepresence Tasks," Ph.D. Dissertation, Stanford University, June 1994.

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Examiner Signature	Kevin Nguyen	Date Considered	01/19/05
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				<i>Complete if Known</i>	
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				Filing Date	March 5, 2002
				First Named Inventor	Louis B. ROSENBERG
				Group Art Unit	2674
				Examiner Name	Kevin M. Nguyen
Sheet	1	of	5	Attorney Docket Number	IMMR-014/02US

U.S. PATENT DOCUMENTS					
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		Number	Kind Code <sup>2</sup> (if known)		
KN		5,877,750		Hanson	03/1999
		3,875,488		Crocker et al.	4/1975
		3,919,691		Noll	11/1975
		4,436,188		Jones	3/1984
		4,477,043		Repperger	10/1984
		4,604,016		Joyce	8/1986
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		4,794,384		Jackson	12/1988
		4,795,296		Jau	1/1989
		4,800,721		Cemenska et al.	1/1989
		4,839,838		LaBiche et al.	6/1989
		4,861,269		Meenen, Jr.	8/1989
		4,868,549		Affinito et al.	9/1989
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		4,949,119		Moncrief et al.	8/1990
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		5,076,517		Ferranti et al.	12/1991
		5,095,303		Clark et al.	3/1992
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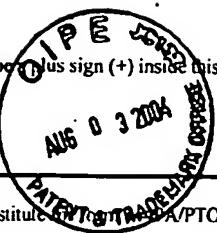
<sup>1</sup> Unique citation designation number.<sup>2</sup> See attached Kinds of U.S. Patent Documents.

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PTO/SB/08A (08-00)

Substitute for TRADE PAPER PATENT & TRADEMARK OFFICE/PTO		<i>Complete if Known</i>	
		Application Number	10/091,750
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(use as many sheets as necessary)</i>		Filing Date	March 5, 2002
		First Named Inventor	Louis B. ROSENBERG
		Group Art Unit	2674
		Examiner Name	Kevin M. Nguyen
		Sheet	2
		Attorney Docket Number	IMMR-014/02US

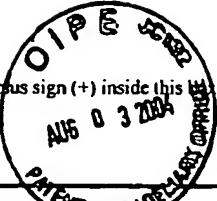
KN	5,189,355		Larkins et al.	2/1993
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	5,381,080		Schnell et al.	1/1995
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	5,457,479		Cheng	10/1995
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	5,473,235		Lance et al.	12/1995
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	5,491,477		Clark et al.	2/1996
	5,512,919		Araki	4/1996
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	5,530,455		Gillick et al.	6/1996
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	5,576,727		Rosenberg et al.	11/1996
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	5,596,347		Robertson et al.	1/1997
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	5,642,469		Hannaford et al.	6/1997
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	5,666,138		Culver	9/1997
	5,666,473		Wallace	9/1997
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	5,691,898		Rosenberg et al.	11/1997
	5,694,013		Stewart et al.	12/1997
	5,709,219		Chen et al.	1/1998
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	5,721,566		Rosenberg et al.	2/1998
	5,724,278		Chen et al.	3/1998

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PTO/SB/08A (08-00)

Substitute for form 1449, PTO				Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)				Application Number	10/091,750
				Filing Date	March 5, 2002
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				Group Art Unit	2674
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KN	5,734,373	Rosenberg et al.	3/1998
	5,736,978	Hasser et al.	4/1998
	5,745,715	Pickover et al.	4/1998
	5,754,023	Rosten et al.	5/1998
	5,755,577	Gillio	5/1998
	5,757,358	Osga	5/1998
	5,760,764	Martinelli	6/1998
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	5,781,172	Engel et al.	7/1998
	5,790,108	Salcudean et al.	8/1998
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	5,805,140	Rosenberg et al.	9/1998
	5,805,165	Thorne, III et al.	9/1998
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	5,823,876	Unbehand	10/1998
	5,825,308	Rosenberg	10/1998
	5,831,408	Jacobus et al.	11/1998
	5,844,392	Peurach et al.	12/1998
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	5,944,151	Jakobs et al.	8/1999
	5,956,484	Rosenberg et al.	9/1999
	5,959,613	Rosenberg et al.	9/1999
✓	5,990,869	Kubica et al.	11/1999

FOREIGN PATENT DOCUMENTS							
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	T <sup>4</sup>
		Office <sup>1</sup>	Number <sup>2</sup>	Kind Code <sup>3</sup> (if known)			
KN	EP.	0085518	A1		RECEIVED	1/1983	
	EP.	0626634	A2			11/1994	
	EP	875819				4/1998	
	WO	95/20788			AUG 31 2004	8/1995	
	WO	95/32459				11/1995	
	WO	97/21160				6/1997	
✓	WO.	97/31333			Technology Center 2600	8/1997	

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<sup>2</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.

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OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS					
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KN	-	Ramstein et al., "The Pantograph: A Large Workspace Haptic Device for a Multimodal Human-Computer Interaction," Computer-Human Interaction, CHI 1994, pp. 1-3.			
		Buttolo et al., "Pen-based force Display for Precision Manipulation in Virtual Environments," IEEE 0-8186-7084-3, 1995, pp. 217-224.			
		Hannaford et al., "Force-Feedback Cursor Control," NASA Tech Briefs, vol. 13, No. 11, 1989, pp. 1-7.			
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		Batter et al., "Grope-1: A computer Display to the sense of Feel," Proc. IFIP Congress, 1971, pp. 759-763.			
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		Adelstein et al., "Design & Implementation of a Force Reflecting Manipulandum for Manual Control Research," 1992, NASA-Ames Research Center and MIT, pp. 1-26.			
		Millman et al., "Design of a 4 Degree of Freedom Force-Reflecting Manipulandum with a Specified Force/Torque Workspace," IEEE CH2969-4, 1991, pp. 1488-1493.			
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		Colgate et al., "Implementation of Stiff Virtual Walls in Force-Reflecting Interfaces," Northwestern University, IL, 1993., pp. 1-8.			
		Hirota et al., "Development of Surface Display," IEEE 0-7803-1363-1, 1993, pp. 256-262.			
		Rosenberg, "Perceptual Design of a Virtual Rigid Surface Contact," Armstrong Laboratory AL/CF-TR-1995-0029, 1993, pp. 1-45.			
		Iwata et al., "Artificial Reality w/ Force-Feedback: Development of Desktop Virtual Space with Compact Master Manipulator," Computer Graphics, vol. 24, No. 4, 1990, pp. 165-170.			
		Russo, "The Design & Implementation of a 3-Degree-of-Freedom Force Output Joystick," Dept. of Mech. Engineering, 1990, pp. 1-42.			
		Rosenberg, L., "Virtual fixtures as tools to enhance operator performance in telepresence environments," SPIE Manipulator Technology, 1993, pp. 1-12.			
		Rosenberg et al., "Perceptual Decomposition of Virtual Haptic Surfaces," Proc. IEEE Symposium on Research Frontiers in Virtual Reality, 1993, pp. 1-8.			
		Ouh-Young et al., "Creating an Illusion of Feel: Control Issues in Force Display," Univ. of N. Carolina, 1989, pp. 1-14.			
↓		Yokokoji et al., "What you can see is what you can feel," IEEE 0-8186-7295-1, 1996, pp. 46-54.			

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<p>Substitute for form <del>10-020-0420</del> TRADEMARKS</p> <p><b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b></p> <p>(use as many sheets as necessary)</p>				<b>Complete if Known</b>	
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				Attorney Docket Number	IMMR-014/02US

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Examiner Signature	<i>Kevin Nguyen</i>	Date Considered	01/19/05
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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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<sup>1</sup> Unique citation designation number.

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